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Delayed Vista holds back new PCs

PCs running the Windows Vista operating system will not appear in stores until after Christmas 2006. Microsoft has announced further delays to the release of Windows Vista, which will launch in January 2007 rather than November 2006 as promised earlier this year. The company also announced that Vista will appear in six different versions when it finally arrives. We published a full report on this in last month's *News*.

This latest delay is bad news for PC vendors, who were anticipating a sales bonanza at the end of the year, and disappointing for users who are waiting for Vista to launch before buying a new PC. Microsoft blamed the delay on its determination to get the final version absolutely right, especially with security, which is an area the company is desperate to improve.

"We could have just gone ahead, but I didn't think it was the right thing to do," said Jim Allchin, the Microsoft executive in charge of Windows development. "We're setting stringent quality bars on what we do." Microsoft's shares dropped three per cent on the day it announced the delay to Vista, which will be the first new version of Windows for over five years.

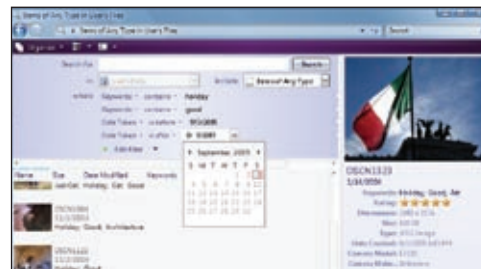
Shares in both HP and Dell fell by around two per cent, although Microsoft's major partners have avoided criticising the latest Vista delay publicly. With Intel due to launch a new range of 64-bit processors before Christmas (see page 250), PC vendors were planning to launch Vista-loaded machines based on the new chips. Now these hardware launches are likely to miss

Christmas, too, although some PCs may ship with a free 'upgrade to Vista' voucher.

"It is a critical eight to 10 weeks for retailing and for the producers," Gartner analyst David Smith said. "The retailers and PC hardware manufacturers work on razor-thin margins, so the impact could be severe."

"Every holiday season there are the top five hot items, and one of those items this year would've been a Windows Vista PC," said Samir Bhavnani, an analyst at Current Analysis. Other analysts predicted that many people would now buy consumer electronics such as music players and widescreen TVs instead.

However, Microsoft insists that PC companies did not want Vista to launch so close to Christmas because it would create instability in the retail market. It will still ship Windows Vista in November to business customers who have paid for a volume licensing deal.



▲ Windows Vista's new interface will not appear on PCs until 2007, after Microsoft delayed its launch again

Dell buys gaming PCs company Alienware

Dell will supply powerful and trendy gaming PCs, following its takeover of games PC specialist Alienware. Alienware has made a name for itself among hardcore gamers for its cutting-edge designs and high-end technical specifications. The price of the takeover, in which Alienware will become an independently run subsidiary, was not revealed.

Dell, the world's largest PC vendor, focuses on supplying cheap machines to businesses. Now it is in control of a company that has made its name by selling expensive machines to the gaming crowd. Dell recently tried to crack this high-margin market, in which it has little presence, with its XPS line of PCs. However, its staid mainstream image has made it a hard sell.

Dell's main challenge will be to prevent its association with

Alienware causing the subsidiary to lose its kudos with its core market. Alienware CEO Nelson Gonzalez was quick to emphasise that "nothing has changed" in the way his company approaches its product development plans. The two companies' business models are very different. Where Dell is notorious for spending little on research and development, focusing on industry-standard designs, Alienware is a low-volume, design-intensive company that charges premium prices.

A Dell spokesman emphasised that the company would focus on buying supplies and manufacturing, and would leave Alienware's product development and marketing well alone.

It is interesting to note that some Alienware PCs contain AMD processors. Dell sells only Intel-based systems, making it distinctive among major PC vendors. It has sometimes hinted that it could start including AMD processors but has never actually done so. By buying

Alienware, Dell has moved closer to dealing with non-Intel processors. A Dell spokesperson confirmed that Alienware will continue to sell AMD-based systems.



► Alienware's futuristic PCs are popular among hardcore gaming enthusiasts

Microsoft unfolds Origami ultra mobile computer

Microsoft has unveiled a brand new category of portable computer called the Ultra Mobile Personal Computer (UMPC). Before the launch, Microsoft's guerrilla marketing campaign, using the codename Origami, prompted speculation that the company was planning an iPod killer. Instead, the company announced what was effectively a design for a shrunk Tablet PC, shaped like a hardback book, with added multimedia playback and wireless features designed to appeal to consumers.

The UMPC is not another Microsoft foray into selling hardware like the Xbox, but rather a reference design for third-party vendors to create their own versions. UMPCs will have a 7" diagonal touch screen with a minimum resolution of 800x600, weigh approximately 2lbs, feature built-in WiFi and Bluetooth and run Windows XP Tablet Edition (until Windows Vista arrives next year). They will also include a USB2 port and a PC Card slot.

Microsoft says Bluetooth will enable the UMPC to access the internet in areas where there is no WiFi coverage by connecting to a Bluetooth phone. It has also suggested that some designs will include built-in telephony. "VoIP is a key scenario [for UMPC]" said Microsoft's general manager for the mobile platform division, Otto Berkes. The design also allows companies to include optional GPS capabilities, enabling the device to act as a navigational aid.

Because UMPCs run Windows XP Tablet Edition, they can run standard Windows applications, although the small screen hardly makes the UMPC an obvious platform for doing office work. Indeed, Microsoft is aiming the UMPC more at multimedia consumers. The device is designed to let you "synchronise with your primary PC and take your music, photos and TV shows anywhere you go," buy and download music and movies wirelessly and even play games.

So far no big-name PC vendors have backed the concept, possibly because of the failure of Microsoft's previous ventures, the Portable Media Center and the Tablet PC. Samsung is the first company to produce a system, which Microsoft used to illustrate the UMPC concept. Samsung's UMPC costs \$1,000 (around £575) but Microsoft expects prices to fall to around the \$500 (£288) mark.

• See *News Analysis* on page 253.



▲ Samsung's Q1 is the first UMPC and enables users to run Windows applications on a 7" touch screen

Laptops to ditch hard disks for flash

A new type of hard disk will dramatically improve battery life and performance in laptop computers. Samsung has launched what it claims is the world's first 32GB solid state hard drive. The drive is housed in the same 1.8" casing as traditional hard disks, making it relatively easy to produce a flash-based computer without much additional design work.

The 32GB drive uses NAND flash, which is used in music players such as Apple's iPod Nano range, as a superior alternative to hard disk-based storage. Solid state storage has no moving parts, so it is more reliable and robust than a hard disk. Samsung says its new drive consumes five per cent of the power of an equivalent hard disk. It also claims that its new drive can access data three times faster and write 150 per cent faster than a high-performance hard disk. Silent operation is a further benefit.

Until recently, flash technology lagged behind disk drives in terms of capacity and cost, but it is catching up and a current glut of flash memory is depressing prices further. Last year Samsung showed off a prototype flash disk with a 16GB capacity. It has made no secret of its ambitions to persuade laptop vendors to produce a flash-only device.

The company is working with Microsoft to ensure that Windows Vista will support flash drives, and Vista already supports NAND flash caches to increase the speed of boot times. Intel will begin producing motherboards with NAND flash chips next year. The chips will work alongside hard disks to cache data, speed up boot times and reduce power consumption.

Google scoops up online word processor

Google has added a web-based word processor to its long list of services. It has bought Upstartle, a four-man company that is developing Writely, a word processor that can be used through a web browser.

Google's growing collection of applications has prompted feverish speculation that the company is preparing an all-out assault on Microsoft's dominance of the PC desktop with a suite of free-to-use web-based programs that compete with Microsoft Office.

Writely is still only in beta, and Google has remained tight-lipped about what it plans to do with its newly acquired word processor. Even its developers admit that Writely has a long way to go to compete with Word.

However, the beta version of Writely can already upload Word, OpenOffice (ODF), RTF, HTML and text documents and create new ones from scratch. It can also save and download them in all the above formats as well as PDF and ZIP.

Besides being free of charge, the program's strengths include seamless support for online sharing of documents, collaborative editing, as well as one-click publishing of content to most popular blogging services.

Another online alternative to Word has also been launched. Ajaxwrite bills itself as "a streamlined word processor, comparable to Microsoft Word," and is available for free.

IN BRIEF

BT TARGETS BROADBAND GLUTTONS

BT is cracking down on data gluttons, notifying around 3,000 of its broadband users that they will either have to cut down or pay up for excessive use of its broadband connections.

The firm is targeting subscribers who download up to 200GB a month. Current limits to its broadband offerings range between 2GB and 40GB a month.

BT, which claims it won't take action against subscribers who occasionally go over this limit, is not alone in curbing its more enthusiastic users. Freedom2Surf has taken similar action.

COMPUTER GAMES TO TREAT 'LAZY EYE'

Computer games may help in the treatment of a condition called amblyopia, or 'lazy eye', according to researchers. Successfully navigating the specially developed games will automatically strengthen the gamer's 'weak' eye.

As one eye works better than the other, the traditional approach is to strengthen the lazy eye by forcing its use, by placing a patch over the good eye, for example. If left untreated, the lazy eye becomes weaker.

The University of Nottingham has been researching the use of computer games that will force the use of the weak eye, aiding the recovery of balanced vision. The system is known as Interactive Binocular Treatment for amblyopia. More information is at www.virart.nott.ac.uk/ibit.

EU WARNS MICROSOFT OVER VISTA

Microsoft has been warned by the EU Competition Commissioner that it must not sell Windows Vista in Europe if it contains certain features.

Neelie Kroes wrote to the company last week to express her concerns, which centre on Microsoft's plans for internet searching. According to a spokesman for Kroes, the EU is concerned that Microsoft could use Internet Explorer 7 to "unfairly direct computer users to Microsoft's own search service".

Google is one of several search companies that have contacted the EU to express concerns over this. Microsoft told the *Wall Street Journal* (through Reuters) that it was not aware of Kroes' letter and therefore could not comment.

IN BRIEF

» BBC RESPONDS TO EBAY BADGE SALES

The BBC has suspended free entrance to attractions across the UK for *Blue Peter* badge holders, following a spate of badge sales on eBay. *Blue Peter* badges are awarded to viewers who have made a contribution to the children's TV programme. Recipients get free access to scores of tourist, entertainment and educational attractions.

The BBC has been monitoring the sale of badges on eBay for some months and has succeeded in getting "large numbers" removed from the site, although not by buying them, it claims.

It announced that the free entrance programme will be suspended until a new, secure system can be put in place to stop people who have bought badges using them to gain free entry.

» WEBSITES EXPLOIT NEW IE VULNERABILITY

A number of malicious sites have cropped up that take advantage of an unpatched bug in Internet Explorer. Microsoft is seeking to reassure customers that it is addressing the problem, which affects most copies of Internet Explorer. The exploit can be triggered simply by visiting a malicious website.

Microsoft says it is "seeing only limited attacks" that use the vulnerability, although security firms claim they have received "numerous reports" of malicious sites hosting the exploit.

The vulnerability, which security firm Secunia rates as highly critical, takes advantage of an unpatched flaw in all versions of Internet Explorer running with Windows 2000, Windows XP and Windows Server 2003, as well as the Internet Explorer 7 Beta 2 Preview version.

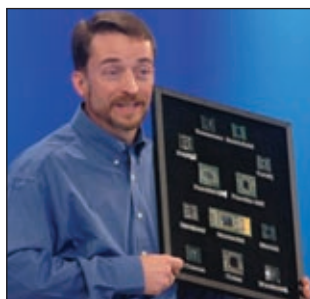
» IBM SETS TRAP FOR WORMS

In a bid to tackle network worms, IBM has created a detection tool that provides invading code with a tempting target. The tool identifies and quarantines the attacker before it can do any damage.

The tool, known as Billy Goat, presents itself as a normal server on a network. Any hackers or cyber criminals who attempt to access it will be detected. Billy Goat baits the trap by responding to unused IP addresses, which, to a worm, looks like a juicy network full of servers.

Intel reveals new Conroe chip to Shopper

Intel has given *Shopper* an inside look at its next-generation desktop processor, Conroe. Keen to prove how powerful the new chip is, Intel demonstrated it running head-to-head against AMD's top-of-the-range dual-core processor. The demonstration took place at the Spring Intel Developer Forum in San Francisco, California.



▲ Intel's Pat Gelsinger shows off the new Conroe processor

Intel's chief technology officer, Justin Rattner, made bold claims about Conroe's performance, saying it will be 40 per cent faster than a Pentium D 950 – which has two cores running at 3.4GHz – and use 40 per cent less power.

Intel demonstrated a PC featuring a Conroe processor with two cores, each running at 2.66GHz, and DDR2-667 memory. Conroe will also support faster DDR2-800 memory. The PC was tested next to an AMD Athlon 64 FX-60 model, overclocked to 2.8GHz, with DDR400 memory. Both PCs were equipped with two Radeon X1900XT graphics cards running in CrossFire mode for maximum speed.

We witnessed two game demos and one multimedia test. The F.E.A.R. game test ran at a resolution of 640x480, with anti-

aliasing disabled to stress the load on the processor. Conroe averaged 346 frames per second (fps) in the game's built-in benchmark, beating the FX-60's 237fps.

In a custom Intel time demo in Quake 4, running at a resolution of 1,024x768, Conroe averaged 282fps against the FX-60's 225fps. We also saw the Conroe machine encode a one hour 10 minute audio Wav file into a 128KB/s MP3 file in iTunes, which took one minute 14 seconds, compared with the FX-60's one minute 30 seconds.

AMD's desktop product and brand manager Teresa de Onis said, "We find it interesting that some benchmarks have been run on a processor that's supposedly six months away, with products we have been shipping for quite some time, in an environment that a third-party has not verified".

Global roaming for wireless internet users

Intel hopes to make it easier for WiFi users to roam between wireless networks. The firm demonstrated new products that enable users to subscribe to one service but roam between different wireless networking systems without entering new usernames and passwords.

Using the open International Roaming Access Protocols (IRAP), Intel's seamless roaming system will use a single billing account and let users stay connected through whichever services are available to them, including mobile phone, WiFi networks and WiMax systems, without having to re-authenticate.

"For mere mortal users we have to make access to wireless easier," said Kevin Kahn, director of Intel's communications labs. "We're looking at usernames and passwords, as well as a SIM as authentication."

The move should bring wireless internet access into the same realm as mobile phone networks, which already offer global roaming. Intel has signed up major US WiFi providers including Boingo and iBahn, and many expect UK announcements to follow.

With so many wireless standards already in use and many more on the way, an obstacle to global roaming could be the limited range of standards current notebook computers support. Intel aims to solve this problem by developing CMOS radios, which can handle many different standards. "CMOS radios have a clear advantage on the amount of power you burn," said Kahn. "They also increase the ability to handle the number of different standards."

CMOS chips will also make integration with notebooks easier and cheaper. Intel has already demonstrated a working prototype of a MIMO CMOS radio, which delivered throughput of up to 108Mbit/s.

WiMax, which offers better range and throughput for large wireless installations, such as entire cities, will play an important role. Intel has built a network with a throughput of 2Mbit/s and a range that covers most of San Francisco. It demonstrated the technology with a PC attached to a scooter, which received traffic updates, directions and even streaming video from a webcam.

"Our aim is for a global standard for WiMax," said Sean Maloney, general manager of Intel's Mobility Group. "We expect data in the 2.3GHz, 2.5GHz, 3GHz and 5GHz bands to cover the entire world."

Supporting so many radio bands is a problem in itself, but Intel demonstrated the world's first PC Card that does this. German network specialist Airspan was quick to follow with its announcement of a USB WiMax adaptor that supports the same range of bands. Intel went a step further; Maloney unveiled Intel's integrated WiFi/WiMax integrated radio, which will give notebooks full access to all WiFi and WiMax networks.



▲ Intel's Kevin Kahn shows how Internet Roaming Access Protocols will allow users to get on their bikes

Chancellor axes tax-free home PCs in Budget

The government has axed a scheme that allowed employers to supply computers to staff tax-free. In the Budget announcement, Gordon Brown acknowledged that the Home Computing Initiative (HCI) had been beneficial to employees of participating companies but announced that the government "now wishes to focus support on groups with the poorest access to technology".

A Treasury spokesman claimed that the scheme was catering for the wrong sort of people and that, while over 90 per cent of high earners own a computer, only 25 per cent of the lowest-earning people did. An Evesham Micros spokesperson told *Shopper* that the uptake of tax-free PC leases was low among high earners, who already had PCs, but that lower earners were signing up in droves, "with a take-up of 25 per cent".

Evesham's Carolyn Worth said that while the HCI had taken a while to get off the ground, it provided customers with "good support and training packages"

and the prices were exceptionally competitive. "Many of the companies who signed up drove hard bargains and insisted on prices that were lower than [those in] the catalogue," she said.

The HCI scheme was launched in 1999 and, in 2004, companies were told that there would be a review five years later. At that time, Andrew Pinder, the government's e-Envoy, said, "PC Leasing schemes have an important role to play in getting the UK online. There is a need for those corporations across Britain who can, to take the lead in pioneering low-cost PC leasing initiatives, using a tax break introduced by the Chancellor."

The death of the HCI has come as a complete shock to participating PC companies, many of which will face financial problems. "There was no indication that it would happen," said Worth, who claimed that her company received one email prior to the announcement. It asked for figures on the number of people who had signed up.



▲ Gordon Brown has scrapped the Home Computing Initiative

Employees who can't afford a new PC appear to be left high and dry. The government has suggested no new measures to address those with the "poorest access to technology" and there is no guarantee that those who have recently applied will be able to lease their PCs.

The Office of Fair Trading handles the applications, the deadline for which was 5th April. However, as *Shopper* went to press the OFT was unable to tell PC companies how many applications it could handle before the deadline. Current participants in the scheme can continue leasing their systems until they have paid for them.

For more information about the ongoing state of the HCI, go to www.bizzapp.biz. This website also includes details on how you can pressure the government to reverse its decision.

IN BRIEF

BRITANNICA IN WAR OF WORDS

A war of words has broken out over the accuracy of the *Encyclopaedia Britannica*. It was sparked by a report, published while Wikipedia faced accusations of inaccuracy, that put the two sources of information on a par.

Britannica issued a 20-page report in response to an article in the journal *Nature*, which suggested errors in Wikipedia were rare and it was on a level with *Britannica* in terms of accuracy.

Britannica took umbrage at this comparison. "Almost everything about the journal's investigation, from the criteria for identifying inaccuracies to the discrepancy between the article text and its headline, was wrong and misleading... The study was so poorly carried out and its findings so error-laden that it was without merit," it stated.

Nature maintains the study was balanced and impartial, and that independent scholars had reviewed entries on the same subject from both resources without knowing which was which. The result showed factual inaccuracies numbered 123 for *Britannica* and 162 for Wikipedia.

NEW YORK SUES FREEIPODS SITE

The State of New York Attorney General is to sue the company behind the FreeiPods site for what it calls "the largest deliberate breach of privacy in internet history".

"Unless checked now, companies that collect and sell information on consumers will continue to find ways to erode the basic standards that protect privacy in the internet age," Eliot Spitzer said.

Gratis Internet runs several websites including FreeiPods.com, FreeCDs.com, FreeDVDs.com and FreeVideoGames.com. These offer free products in return for taking part in marketing surveys and handing over personal details.

The suit alleges that, while the company promised not to share the collected data with third parties and said, "We will never give out, sell or lend your name or information to anyone", the company did indeed do so.

Between 2004 and 2005, lists of millions of Gratis's customers were passed on to three email marketers, who bombarded their accounts with "hundreds of millions" of spam emails.

Intel plans reign of Tera

Intel has outlined its plan for future generations of computer processor, revealing that its Tera-Scale Computing Research Program will increase performance by building chips with multiple cores rather than increasing clock speeds.

"It doesn't take a lot of arithmetic to realise that the ongoing progress of Moore's Law will lead to a time when cores are counted in the tens and possibly the hundreds per die," said Justin Rattner, Intel's chief technology officer.

One of the big problems Intel has had to address with multiple cores is memory management. "The real challenge is how to interconnect the cores and how to feed the beast. How do you bring enough memory bandwidth into this complex system of processors to make the whole endeavour worthwhile?" he asked.

Current Intel architecture relies on a memory controller that is separate from the processors. This makes complex memory management difficult and is something AMD has already addressed by integrating the memory controller with the actual processor.



▲ Intel's Justin Rattner sees future computer processors with hundreds of cores

Another problem with current memory management is the lock-based memory system, whereby a process or processor locks a portion of memory it needs to complete its task. This works most of the time, but a situation can arise where one process needs access to another process's locked memory. The result is a deadlock in the system, as both processes end up waiting for the portion of memory they need to become free. While deadlocks can often be solved by forcing one process to terminate, these conflicts slow a computer down.

The solution is transactional memory, where multiple processes and processors share memory. Each process then keeps a log of the changes it makes so they can be undone if an error occurs. Rattner demonstrated an eight-core machine running a Java program optimised for multiple cores. With lock-based memory the program completed in 10.4 seconds, but with transactional memory the task was over twice as fast, in 4.1 seconds.

The technology demonstrated was implemented in software, but Intel has to develop a hardware version if it's to be successful.

IN BRIEF

» PAYPAL TEXTS ITSELF TO MOBILE PHONES

PayPal is to launch a new service that makes it possible to pay into PayPal accounts from a mobile phone. Users first have to have a PayPal account and then need to activate their phone using the website. After that, they can send money, either with a simple SMS message detailing the amount and destination account, or by dialling a number and following automated instructions.

To receive funds sent via the service, PayPal users log on to the website. There is no charge for sending money, although network operators will charge for the text message. Receiving money is free to those with personal accounts.

» BROADBAND HEADING FOR MARS

Interplanetary communications are about to enter the broadband era. Researchers at MIT have made a breakthrough that improves the speed of transmissions made through space.

Current links are limited to around 128Kbit/s. Information sent in this manner takes hours to get from Mars to Earth.

MIT technicians say that optical photon links could improve speeds by a factor of thousands. Beaming information over a laser beam is much quicker than using radio. Radio operates on longer wavelengths than light, but both travel at the same speed. Light, with its shorter wavelength, can carry more information in any given timeframe.

» NEC DEVELOPS LASER-POWERED DATA

NEC claims it has broken data transfer records with chips that use lasers rather than metal connections. NEC's laser communications chips are capable of data transfers up to 25Gbit/s.

NEC built a semiconducting laser diode called a Vertical-Cavity Surface Emitting Laser (VCSEL), which converts electrical signals into laser pulses. It is constructed from a more conductive alloy than conventional aluminium diodes. The data is carried between processors via optical fibres.

Such a setup could provide a massive boost in computing power, possibly leading to the first petaflop computers, which would be able to perform one thousand trillion calculations each second.

US military plans insect robot wars

Robot-controlled insects are the latest crazy project being funded by the US military, which recently announced that it is also working on a project to create a fleet of spy sharks implanted with electrodes.

The Pentagon's Defense Advanced Research Projects Agency (DARPA) is behind both projects. This is the same DARPA that pioneered a decentralised network of computers called ARPANET in the 1960s. ARPANET evolved into the internet.

DARPA, which has a budget of \$2 billion (around £1.2bn) a year, has asked for researchers to help it fit tiny sensors to insects. These sensors should be able to transmit information wirelessly from inaccessible or dangerous areas.

"DARPA seeks innovative proposals to develop technology to create insect cyborgs, possibly enabled by intimately integrating microsystems within insects, during their early stages of metamorphoses," it said.

The idea is to create a cheaper biological version of the unmanned drones so beloved of the US military. DARPA proposes inserting a tiny microchip into an insect larva so that, when the insect later emerges, it has a transmitting processor embedded in its body. Another proposed project, which is more ambitious and far-fetched, involves controlling the insects' movements using a system based on GPS.

The winning researcher would have to deliver "an insect within five metres of a specific target located 100 metres away," said DARPA. Entomology expert Dr George McGavin of the Oxford University Museum of Natural History told the BBC that the project's goals were "ludicrous".

"What adult insects want to do is basically reproduce and lay eggs. You would have to rewire the entire brain patterns," he said. Despite the success of some mad-cap schemes, Dr McGavin doesn't



believe that DARPA is on to a winner here. "Not all wacky ideas are without value. Some produce the goods. But my feeling is this will probably not."

DARPA also plans to militarise sharks, according to the *New Scientist*. The agency believes that implanting electrodes in shark brains will make it possible to control their movements so that it can "exploit sharks' natural ability to glide through the water, sense delicate electrical gradients and follow chemical trails".

Virus threat to RFID tags

RFID (Radio Frequency ID) tags, the tiny radio transmitter chips that are to replace barcodes, are vulnerable to virus attacks that could compromise national security, destroy commercial inventory tracking systems and invade individuals' privacy.

This is the disturbing conclusion of researchers at Amsterdam's Free University, who warned that a rogue RFID chip "could be infected with a virus and this virus can infect the back-end

database used by the RFID software. From there it can be easily spread to other RFID tags."

The tags are likely to find their way into many products, and even individuals, over the coming years. If capable of being infected with viruses, they could prove disruptive rather than useful.

"Everyone working on RFID technology has tacitly assumed that the mere act of scanning an RFID tag cannot modify back-end software and certainly not in a malicious way. Unfortunately, they are wrong," the researchers said in their report entitled *Is Your Cat Infected with a Computer Virus?*. The report's title is a reference to the practice of injecting animals and humans with RFID tags for tracking and identification.

The report produced an example of an attack, where a virus-infected RFID tag took advantage of an RFID reader that was not programmed to check the validity or integrity of the strings it reads from tags. The RFID tag was able to perform a SQL code-injection attack, which enabled it to corrupt a back-end SQL database that was collecting tag

data. Not only could such a virus corrupt data or even bring down a system, it could also program the database to spread the virus to other RFID tags. The scientists also warned that certain kinds of RFID tags could directly reprogram other tags without requiring the infection of a database system.

With major retailers and government agencies pressing ahead with the deployment of RFID tags, which could one day become as ubiquitous as barcodes are today, the fall-out from any successful virus attack could dwarf the impact of today's computer viruses. Airport security systems could be compromised and supermarkets put out of business, and personal information held on items such as ID cards or passports could be stolen.

The scientists said they intend their report to be a "wake-up call to the RFID industry" to design systems that are secure before the widespread deployment of the technology. Currently there is little or no government regulation of RFID technology to ensure its robustness against this kind of attack.



▲ RFID tags will appear on many products over the coming years